

SPECIFICATION AMENDMENTS

On page 1, insert above line 1, insert--Priority Claim

The present application claims priority on European Patent Application 022539126.1 filed 5 June 2002.--

On page 1, after the priority claimed, insert--Field of the Invention--

On page 1, above line 4, insert--Background of the Invention--

Paragraph at line 9 of page 1 has been amended as follows:

-- ~~US-A-4,046,829~~ US Pat No. 4,046,829 discloses a method for producing hydrocarbons from coal using an iron based Fischer-Tropsch catalyst. Coal is gasified and synthesis gas formed is gas scrubbed and subsequently subjected to partial oxidation with oxygen. After the Fischer-Tropsch conversion of synthesis gas low hydrocarbons are separated, recycled and after carbon dioxide removal mixed with synthesis gas prior to the partial oxidation.--

Paragraph at line 17 of page 1 has been amended as follows:

-- ~~US-A-4,433,065~~ US Pat No. 4,433,065 discloses a process for producing hydrocarbons from coal using a cobalt based Fischer-Tropsch catalyst. After removal of liquid hydrocarbons the gas phase is subject to carbon dioxide removal. After separation a hydrogen comprising stream is recycled to the partial oxidation process, a light hydrocarbons comprising stream is recycled to the coal gasification process, and a carbon monoxide comprising stream is subjected to combustion for electricity generation.--

Paragraph at line 26 of page 1, ending at line 4, has been amended as follows:

~~--US-A-5,324,335~~ US Pat No. 5,324,335 discloses a process for producing hydrocarbons using an iron-based Fischer-Tropsch catalyst in which hydrocarbon containing gas is subjected to steam reforming for producing synthesis gas. After carbon dioxide removal the synthesis gas is subjected to the Fischer-Tropsch conversion. Light hydrocarbons are separated, recycled and mixed with the synthesis gas.--

On page 2, delete line 5-18.

On page 2, above line 19, insert--Summary of the Invention--

Paragraph at line 19 of page 2, ending at line 3 of page 3, has been amended as follows:

-- The present invention provides a solution to this problem with the ~~is directed to a process for the production of hydrocarbons from gaseous hydrocarbonaceous feed comprising the steps of:~~

- i) ~~partial oxidation~~ partially oxidizing conversion of the gaseous hydrocarbonaceous feed and oxygen containing gas at elevated temperature and pressure into synthesis gas;
- ii) ~~catalytical conversion of~~ catalytically converting the synthesis gas of step i) using a cobalt based Fischer-Tropsch catalyst into a hydrocarbons comprising stream;
- iii) separating the hydrocarbons comprising stream of step ii) into a hydrocarbons product stream and a recycle stream; and,
- iv) ~~removing carbon dioxide from the recycle stream and recycle of carbon dioxide depleted recycle stream to step i).~~ --

On page 3, after line 3, insert--Detailed Description of the Invention--

On page 3 above line 4, insert the following paragraph:

--~~The present invention has for its object to provide~~ The invention is directed to a process for the production of relatively high hydrocarbons using a cobalt Fischer-Tropsch catalyst. More particularly, the invention concerns a cobalt catalyst, especially a cobalt-zirconia catalyst, which is favorable for producing a ~~relative~~ relatively large amount of hydrocarbons in the C₁₀-C₁₄ range beside a lighter and a heavier fraction. This favor for C₁₀-C₁₄ hydrocarbons, especially unsaturated hydrocarbons, results, however, in a higher production of offgas when compared with a process which is optimal for the production of the most heavy paraffinic products. In modern concept plant design this offgas may not be flared but rather is to be used or reprocessed.--

Paragraph at line 4 of page 3 has been amended as follows:

-- According to the process of the invention, the hydrocarbons comprising stream is separated into a hydrocarbons product stream and a recycle stream. Carbon dioxide is removed from the recycle stream and the carbon dioxide depleted recycle stream is used as a feed for the partial oxidation conversion. Preferably at least 70 vol.% of carbon dioxide is removed, more preferably at least 80 vol.%, even more preferably at least 90 vol.%. The recycle stream comprises predominantly hydrogen, carbon monoxide, C₁ to C₃ hydrocarbon, in some cases also C₄ and minor amounts of C₅₊ hydrocarbon and inerts as nitrogen noble gasses.--

Paragraph at line 16 of page 3 has been amended as follows:

-- A reprocessing of the recycle stream without prior carbon dioxide removal would have resulted in synthesis gas having a low H₂/CO ratio which is inappropriate for use in the Fischer-Tropsch conversion of synthesis gas ~~for the objected~~ into the desired hydrocarbons. Direct use of the recycle stream in the partial oxidation conversion would provide synthesis gas with a ~~too high~~ level of inerts that is too high. Removal of carbon dioxide prior to use in the partial oxidation conversion will reduce the level of inerts in the synthesis gas produced. Use of the carbon dioxide depleted recycle stream in turn results in the use of less oxygen in the partial oxidation conversion. The recycle stream optimizes the carbon efficiency of the process. This in its turn increases the thermal efficiency of the process. Finally, removal of carbon dioxide ~~requires less costs~~ less than a conversion of carbon dioxide into carbon monoxide.--

Paragraph at line 1 of page 4 has been amended as follows:

--According to the invention, the process of the invention allows the use of a cobalt based Fischer-Tropsch catalyst, may be used. In particular, the catalyst may be especially a cobalt on zirconia catalyst, which is favorable for the production of C₁₀-C₁₄; hydrocarbons whereas wherein the offgas produced does not result in a an extensive increase of costs and the amount of carbon dioxide to be removed is minimal due to the use of gaseous hydrocarbonaceous feed which results in a less lower production of carbon dioxide.--

Paragraph at line 16 of page 4 has been amended as follows:

-- In order to avoid a build-up of inerts in the process, it is preferred ~~when that~~ part of the recycle stream of step iii), e.g. between 5 and 50 vol.%, preferably between 10 and 40 vol.%, of the total stream, is used as fuel in steam reforming of gaseous hydrocarbonaceous feed for producing hydrogen supplement for synthesis gas of step i).--

Paragraph at line 29 of page 6 has been amended as follows:

-- The gaseous mixture, ~~comprises~~ comprising predominantly hydrogen, carbon monoxide and optionally nitrogen, is contacted with a suitable catalyst in the catalytic conversion stage, in which the normally liquid hydro-carbons are formed. Suitably at least 70 v/v% of the syngas is contacted with the catalyst, preferably at least 80%, more preferably at least 90, still more preferably all the syngas.--

Paragraph at line 4 of page 7 has been amended as follows:

-- The catalysts used for the catalytic conversion of the mixture comprising hydrogen and carbon monoxide into hydrocarbons are known in the art and are usually referred to as Fischer-Tropsch catalysts. The catalysts for use in the Fischer-Tropsch hydrocarbon synthesis process ~~comprises~~ comprise, as the catalytically active component cobalt.--

On page 13 above line 1 insert --We claim:--